Surface Water Resources

Surface water is a valuable community resource. It supports aquatic species and ecosystems, provides water recreation, and can be a source of drinking water. The quantity and the quality of these resources are both important. Water quality is affected by construction, operation and maintenance of roadways; and by commercial, residential and industrial activities. The quantity and location of impervious surfaces within an individual drainage basin affect runoff, and thus water quality.

DEIS Maps

For the DEIS, maps were developed to show existing rivers, streams, and lakes within the study area, and their associated drainage basins. The primary source of data was geographic information system (GIS) information made available from King County. Similar GIS data were obtained from the Snohomish County GIS Center. The drainage basin boundaries and stream network were then refined using U.S. Geological Survey (USGS) quadrangle maps of the study area. "Surface Water Stream Basins" is the resulting map of the streams and drainage basins.

Some riverbeds have been lowered and channelized for flood control. These rivers have lost some connection with their respective floodplains and wetlands. The "100-Year Flood Plains" map identifies the 100-year floodplains. This is the same map as that provided in the "Floodplains" section.

There are extensive water quality data for streams in the study area. The map, "Water Quality Impaired Streams," identifies the streams (and lakes) that violate one or more water quality standards and that are not expected to improve in the near future. The source of data was Appendix A of the Section 305b Report.

The locations of existing stormwater management facilities for I-405 and other major state highways in the study area are shown in the map, "Existing Stormwater Management Facilities." Different types of facilities are identified.

Infiltration of treated stormwater is the preferred approach for managing runoff. This approach reduces the peak runoff from the receiving stream, recharges the local groundwater, and provides water later for maintenance of base stream flow. The map "Soils Potentially Suitable for Stormwater Recharge" identifies soils that could be used for this purpose.

RS/GIS Maps

The map of "Existing Stormwater Management Facilities" is not generated from the same data as that used for the corresponding DEIS map, since the original data is no longer available. The RS/GIS version of the map was generated using the WSDOT Outfall database, in combination with new data (catch basins, approach culverts and cross culverts) that are being developed by the Northwest Regional Office. The RS/GIS map also includes land cover, which was identified using automated classification of Landsat-7 imagery based on spectral signatures, supplemented by field verification and validation. The resulting database was overlain onto a standard map-template that has major roads, lakes, places, and other features.

The map of "Surface Water Stream Basins" is the same as that listed under "Fish and Aquatic Habitat." It shows the streams and drainage basins, together with the locations of culverts, dams and fishways.

The map of the "100-Year Flood Plains" map is the same as that listed under "RS/GIS Floodplains." Refer to that section for a description. The 100-year floodplains were overlain onto a standard map-template that has hillshaded topography, major roads, lakes, places, and other features. Local topography affects runoff and water quality.

The data used to generate the DEIS map of "Soils Potentially Suitable for Stormwater Recharge" was no longer available, so Surficial Geology data was queried to approximate that layer for the RS/GIS version. Land cover information was then added; the types of land cover occurring over rechargeable soils can now be identified.

"Water Quality Impaired Streams" shows watercourses, segments, and waterbodies that have water quality impairments, overlain onto a land use map. The locations of impaired streams and other water bodies are based on the same source of data as that used for the DEIS map – the Section 305b Report. The land use information was derived from automated classification of Landsat-7 imagery based on spectral signatures, supplemented by field verification and validation.